

Theta Functions and Locally Symmetric Spaces of Orthogonal Type

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A classical problem in number theory is to count the number of integral solutions of positive definite quadratic forms. For example, Lagrange's four square theorem states that every nonnegative integer can be expressed as the sum of four-squares of integers. The aim of this talk is to give an introduction to this problem and to explain how it can be solved using the theory of theta functions and modular forms. We will then discuss a generalization of the positive definite case to indefinite quadratic forms using the theory of locally symmetric spaces of orthogonal type.